

WE CLAIM:

1. A device for creating an opening in a first blood vessel and for sealing the opening in the first blood vessel while an anastomosis is created between the first blood vessel and a second blood vessel, the device comprising:  
a cutting mechanism for creating the opening in the first blood vessel, the cutting mechanism comprising at least one electrode;  
a seal for sealing the opening in the first blood vessel; and  
a tool body coupled to the cutting mechanism, the tool body comprising an inner lumen for delivering the seal through the tool body and into the opening in the first blood vessel.
2. The device of claim 1 further comprising a tether attached to the seal.
3. The device of claim 1 further comprising a shaft attached to the seal.
4. The device of claim 1 further comprising a rod attached to the seal.
5. The device of claim 1 further comprising a conductor for delivering energy to the electrode.
6. The device of claim 5 wherein the energy is RF energy.
7. The device of claim 5 wherein the conductor is metal.
8. The device of claim 1 wherein the seal comprises a coating.
9. The device of claim 1 wherein the seal comprises a flexible material.

10. The device of claim 1 wherein the seal comprises one or more ribs.
11. The device of claim 1 further comprising a shaft for delivering the seal through the tool body and into the opening in the first blood vessel.
12. The device of claim 1 further comprising a rod for delivering the seal through the tool body and into the opening in the first blood vessel.
13. The device of claim 1 wherein at least a portion of the seal is inflatable.
14. The device of claim 13 wherein the seal comprises one or more inflatable chambers.
15. The device of claim 1 wherein the seal comprises one or more openings for delivering one or more fluids.
16. The device of claim 15 wherein the seal comprises one or more openings for delivering one or more agents.
17. The device of claim 1 wherein the seal comprises one or more suture guides.
18. The device of claim 1 wherein the seal comprises a plurality of sealing members which are used in combination to seal the opening.
19. The device of claim 1 wherein the inner lumen of the tool body is coupled to a suction line.
20. The device of claim 1 wherein the seal comprises a dissolvable material.

21. A device for creating an opening in a first blood vessel and for sealing the opening in the first blood vessel while an anastomosis is created between the first blood vessel and a second blood vessel, the device comprising:

a cutting mechanism having at least one cutting blade for creating the opening in the first blood vessel;

an inflatable seal having at least one inflatable chamber for sealing the opening in the first blood vessel; and

a tool body coupled to the cutting mechanism, the tool body comprising an inner lumen for delivering the seal through the tool body and into the opening in the first blood vessel.

22. The device of claim 21 further comprising at least one lumen coupled to the inflatable chamber.

23. The device of claim 21 wherein the seal comprises a coating.

24. The device of claim 21 wherein the seal comprises a flexible material.

25. The device of claim 21 wherein the seal comprises one or more ribs.

26. The device of claim 21 further comprising a shaft for delivering the seal through the tool body and into the opening in the first blood vessel.

27. The device of claim 21 wherein the seal comprises one or more openings for delivering one or more fluids.

28. The device of claim 27 wherein the seal comprises one or more openings for delivering one or more agents.

29. The device of claim 21 wherein the seal comprises one or more suture guides.

30. The device of claim 21 wherein the inner lumen of the tool body is coupled to a suction line.

31. A seal for temporarily sealing an opening in a blood vessel comprising:

a seal member having an inflatable chamber, the seal member having a collapsed configuration and an inflated configuration; and

a shaft coupled to the seal member, the shaft having an inner lumen fluidly connected to the inflatable chamber for adding or removing fluid from the inflatable chamber.

32. The device of claim 31 wherein the seal member comprises a coating.

33. The device of claim 31 wherein the seal member comprises a flexible material.

34. The device of claim 31 wherein the seal member comprises one or more ribs.

35. The device of claim 31 wherein the seal comprises one or more openings for delivering one or more fluids.

36. The device of claim 31 wherein the seal comprises one or more openings for delivering one or more agents.

37. The device of claim 31 wherein the seal comprises one or more suture guides.

38. A seal for temporarily sealing an opening in a blood vessel comprising:

a plurality of seal members coupled to a delivery shaft, wherein the seal members are configurable into a delivery configuration for passage through the opening in the blood vessel and a sealing configuration for sealing the opening in the blood vessel.

39. The device of claim 38 wherein the seal members comprise a coating.

40. The device of claim 38 wherein the seal members comprises a flexible material.

41. The device of claim 38 wherein the seal members comprises one or more ribs.

42. The device of claim 38 wherein the seal members comprise one or more openings for delivering one or more fluids.

43. The device of claim 38 wherein the seal members comprise one or more openings for delivering one or more agents.

44. The device of claim 38 wherein the seal members comprise one or more suture guides.

45. The device of claim 38 wherein the delivery configuration includes the seal members to be in a stacked configuration.

46. The device of claim 38 wherein the sealing configuration includes the seal members to be in a fanned out configuration.

47. The device of claim 38 wherein the seal members comprise one or more suture guides.

48. A device for creating an opening in a first blood vessel and for sealing the opening in the first blood vessel while an anastomosis is created between the first blood vessel and a second blood vessel, the device comprising:

a cutting mechanism having at least one cutting blade for creating the opening in the first blood vessel;

a seal comprising a plurality of seal members coupled to a delivery shaft, wherein the seal members are configurable into a delivery configuration for passage through the opening in the blood vessel and a sealing configuration for sealing the opening in the blood vessel; and

a tool body coupled to the cutting mechanism, the tool body comprising an inner lumen for delivering the seal through the tool body and into the opening in the first blood vessel.

49. The device of claim 48 wherein the seal comprise a coating.

50. The device of claim 48 wherein the seal comprises a flexible material.

51. The device of claim 48 wherein the seal comprises one or more ribs.

52. The device of claim 48 wherein the seal comprises one or more openings for delivering one or more fluids.

53. The device of claim 48 wherein the seal comprises one or more openings for delivering one or more agents.

54. The device of claim 48 wherein the seal comprises one or more suture guides.

55. The device of claim 48 wherein the delivery configuration comprises the seal members being in a stacked configuration.

56. The device of claim 48 wherein the sealing configuration comprises the seal members being in a fanned out configuration.

57. The device of claim 48 wherein the seal comprises one or more suture guides.

58. A method of constructing an anastomosis between a first vessel and a second vessel comprising:

- providing a device comprising an electrode for creating an opening in a vessel and a seal for sealing the opening in the vessel;
- positioning the electrode adjacent a wall of the first vessel;
- applying sufficient energy to the electrode to form an opening in the first vessel;
- delivering the seal in a first configuration into the opening in the first vessel;
- deploying the seal to a second configuration to seal the opening;
- attaching the second vessel to the first vessel to form the anastomosis;
- deploying the seal to the first configuration; and
- removing the seal from the opening.

59. The method of claim 58 wherein the first configuration is a low-profile configuration.

60. The method of claim 58 wherein the second configuration is an expanded-profile configuration.

61. The method of claim 60 wherein the expanded-profile configuration is an inflated configuration.

62. The method of claim 58 further comprising delivering one or more fluids to the first vessel while the seal is in a second configuration.

63. The method of claim 58 further comprising delivering one or more agents to the first vessel while the seal is in a second configuration.

64. A method of constructing an anastomosis between a first vessel and a second vessel comprising:

- providing a sealing assembly comprising a seal and a tether;
- positioning the tether so that at least a portion of the tether is positioned within the second vessel;
- creating an opening in the first vessel;
- inserting a seal in a first configuration through the opening;
- deploying the seal to a second configuration to seal the opening;
- attaching the second vessel to the first vessel to form the anastomosis;
- deploying the seal to the first configuration; and
- removing the seal through the second vessel.

65. The method of claim 64 wherein the first configuration is a low-profile configuration.

66. The method of claim 64 wherein the second configuration is an expanded-profile configuration.

67. The method of claim 66 wherein the expanded-profile configuration is an inflated configuration.



68. The method of claim 64 further comprising delivering one or more fluids to the first vessel while the seal is in a second configuration.

69. The method of claim 64 further comprising delivering one or more agents to the first vessel while the seal is in a second configuration.